



## Uncertainty in Greenland glacial isostatic adjustment

**Milne, G. A.; Lecavalier, B.; Kjeldsen, K. K.; Kjaer, K. H.; Wolstencroft, M.; Wake, L. M.; Ross Simpson, M. J.; Long, A. J.; Woodroffe, S.; Korsgaard, N. J.**

*Total number of authors:*  
12

*Publication date:*  
2013

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Milne, G. A., Lecavalier, B., Kjeldsen, K. K., Kjaer, K. H., Wolstencroft, M., Wake, L. M., Ross Simpson, M. J., Long, A. J., Woodroffe, S., Korsgaard, N. J., Bjork, A. A., & Khan, S. A. (2013). *Uncertainty in Greenland glacial isostatic adjustment*. Abstract from AGU Fall Meeting 2013, San Francisco, United States.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

**CONTROL ID:** 1807329

**TITLE:** Uncertainty in Greenland glacial isostatic adjustment (*Invited*)

**AUTHORS (FIRST NAME, LAST NAME):** Glenn A. Milne<sup>1</sup>, Benoit Lecavalier<sup>1</sup>, Kristian K Kjeldsen<sup>2</sup>, Kurt Henrik Kjaer<sup>2</sup>, Martin Wolstencroft<sup>3</sup>, Leanne M Wake<sup>4</sup>, Matthew James Ross Simpson<sup>5</sup>, Antony J Long<sup>3</sup>, Sarah Woodroffe<sup>3</sup>, Niels J Korsgaard<sup>2</sup>, Anders A Bjork<sup>2</sup>, Shfaqat Abbas Khan<sup>6</sup>

**INSTITUTIONS (ALL):** 1. University of Ottawa, Ottawa, ON, Canada.  
2. University of Copenhagen, Copenhagen, Denmark.  
3. Durham University, Durham, United Kingdom.  
4. Northumbria University, Newcastle, United Kingdom.  
5. Norwegian Mapping Authority, Hønefoss, Norway.  
6. Technical University of Denmark, Lyngby, Denmark.

**ABSTRACT BODY:** It is well known that the interpretation of geodetic data in Greenland to constrain recent ice mass changes requires knowledge of isostatic land motion associated with past changes in the ice sheet. In this talk we will consider a variety of factors that limit how well the signal due to past mass changes (commonly referred to as glacial isostatic adjustment (GIA)) can be defined. Predictions based on a new model of Greenland GIA will be shown. Using these predictions as a reference, we will consider the influence of plausible variations in some key aspects of both the Earth and ice load components of the GIA model on predictions of land motion and gravity changes. The sensitivity of model output to plausible variations in both depth-dependent and lateral viscosity structure will be considered. With respect to the ice model, we will compare the relative contributions of loading during key periods of the ice history with a focus on the past few thousand years. In particular, we will show predictions of contemporary land motion and gravity changes due to loading changes following the Little Ice Age computed using a new reconstruction of ice thickness changes based largely on empirical data. A primary contribution of this work will be the identification of dominant sources of uncertainty in current models of Greenland GIA and the regions most significantly affected by this uncertainty.

**KEYWORDS:** 1225 GEODESY AND GRAVITY Global change from geodesy, 0726 CRYOSPHERE Ice sheets.

(No Image Selected)

(No Table Selected)

#### **Additional Details**

**Previously Presented Material:**

#### **Contact Details**

**CONTACT (NAME ONLY):** Glenn Milne

**CONTACT (E-MAIL ONLY):** gamilne@uottawa.ca